2014

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SOIL BIOLOGY SYMPOSIUM

From data to decisions... how far have we come?

Thursday, 15 May 2014
AgriBio-Bundoora, Melbourne

GRDC Grains Research & Development Corporation
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Soil Biology Initiative II
Supported by the GRDC

Theme - Suppressive soils – traits and transferability

Identification and characterisation of disease suppressive soils in the Western Region (DAW00201)

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Objectives:

1) Identify sites in Western Australia (WA) that are suppressive to one or more root diseases of wheat including take-all, rhizoctonia root rot, crown rot and root lesion nematodes (RLN);
2) Determine the components of suppressive sites; and
3) Identify microbial communities using molecular tools in collaboration with the other project in the Soil Biology Initiative.

Key findings:

- From 331 paddocks assessed during 2010 to 2012 in WA, 15 paddocks for rhizoctonia, six for take-all, 22 for crown rot and one for RLN were identified as "potentially" suppressive to disease.
- After confirmation with a pot bioassay, two paddocks were highly suppressive and five paddocks showed moderate suppression to rhizoctonia. Only two paddocks recorded were highly suppressive to crown rot. The bioassay for take-all failed to confirm any sites as being suppressive to this disease. The one RLN identified was not assessed.
- A selection of two suppressive sites for rhizoctonia were more similar to each other than the other farms for the bacterial microbial analysis than the two non-suppressive sites (collaborative research with Helen Hayden, DEPI).

Implications:

Suppressive sites, primarily for rhizoctonia, were found in WA. Sites changed to non-suppressive with change in crop type.

Further reading:

Miyan S, Huberli D, Connor M, MacLeod W (2013) Identification and quantification of disease suppressive soils in Western Australia. In: 10th International Congress of Plant Pathology (ICPP 2013), 25 - 30 August, Beijing, China. Poster available for download: http://researchrepository.murdoch.edu.au/18152/